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A DIGEST OF THE ANNUAL REPORT OF THE BARBERRY  
ERADICATION CAMPAIGN IN MICHIGAN, 1928.

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### INTRODUCTION

The destructive black stem rust of oats, wheat, barley, and rye spreads from the common barberry bush (Berberis vulgaris L.). Black stem rust is the most destructive fungus disease that attacks small grains. Barberry eradication will eliminate all the spore material of stem rust which gets its start from the barberry in the spring. A million dollar annual small grain loss is suffered by Michigan farmers, and this loss will continue until we have eradicated the common barberries from our State.

Every one should learn to recognize, and report all common barberries. The barberry is a tall erect shrub, often growing to a height of twelve feet. The outer bark is grayish, and the inner bark is yellow. Its roots have a very marked yellow color. Spines occur along the stems and are usually in groups of three or more. The leaves grow in clusters, are green or purple in color, and have saw-toothed edges. The yellow flowers and red berries are borne in bunches like those of currants.

The Japanese barberry (Berberis thunbergii D C.) does not spread rust and should not be disturbed. It is not only harmless but it is a beautiful shrub.

### ORGANIZATION AND PERSONNEL OF THE BARBERRY ERADICATION CAMPAIGN

The campaign in Michigan has been conducted cooperatively by the Office of Cereal Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture, the State Agricultural College, the Conference for the Prevention of Grain Rust, Minneapolis, and other agricultural and commercial agencies. Permanent headquarters for this campaign in Michigan are maintained at the Botany Department at Michigan State Agricultural College. A State Leader is employed, and a summer field force which averages thirty-four men is hired annually.

The field men are chosen principally from the upper classmen and graduates of the colleges of the State. A premium is paid for

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1/ State Leader of Barberry Eradication, Botany Building, East Lansing, Michigan.

farm experience and special training. The men are thoroughly trained in a barberry school before they begin work.

#### FINANCING

Most of the funds for the barberry eradication campaign in Michigan have been supplied by the Federal Government. The United States Department of Agriculture has furnished approximately eighty-seven per cent of the actual cash used in the campaign and the State, through its Department of Agriculture, has furnished the balance.

Indirect assistance of great value has been given by other cooperating agencies in the form of office space, storage space, printed and illustrative material, and personal services by members of the State College, the members of its Extension Staff, and members of the State Department of Agriculture.

#### SURVEYS FOR COMMON BARBERRIES

The first survey for common barberries in Michigan was begun in 1918. The nurserymen of the State give their whole hearted co-operation to the work. They voluntarily destroyed the thousands of bushes on hand which were to be sold for ornamental purposes. Rust spreads from common barberries to oats and wheat were found in practically every county. In every case the destructive attacks of stem rust were localized, and such locations were dependent on common barberries within reasonably close proximity.

In 1920 this first survey was extended to the rural sections of the counties comprising the lower tier of counties of Michigan. The survey then progressed to the counties of the north. The farmsteads were visited and the vegetation around the farm buildings was searched for common barberries. No inspection was made of adjacent groves, orchards, fence rows, or native woods, unless fruiting bushes were found on the farmstead. In 1926 a more thorough type of survey was adopted for use in the rural sections. Manistee, Wexford, and counties to the north in the lower peninsula have received or are receiving this more thorough survey. In the rapid survey first used, a number of counties were surveyed in a reasonably short period of time. A larger number of bushes were destroyed, thus preventing them from spreading rust and eliminating the possibility of further seed distribution. The more thorough type of survey demands that more time be used to cover a given county. We are repaid for this time by the freedom from stem rust in such counties after the bushes are removed.

An annual resurvey program was carried on during the period 1921 to 1925 inclusive, in counties which had already been covered by first survey. The purpose of the resurvey was to determine whether sprouts or seedlings were present at places where an attempt had previously been made to destroy barberries.

The thirteen principal grain growing States of the north and northwest are engaged in this campaign. They are the States of Ohio, Michigan, Indiana, Illinois, Wisconsin, Minnesota, Iowa, Nebraska, South Dakota, North Dakota, Montana, Wyoming, and Colorado. Of the States engaged in the eradication work, our State of Michigan has the negative honor of having already located within her borders more barberry bushes and seedlings than any one of the other States.

#### SUMMARY OF ALL ACTIVITIES, 1928.

##### Surveys

The major phase of the field work in the Barberry Eradication Campaign for 1928 was first survey. The thirty-five men comprising the summer field force found and eradicated 1,204,917 barberry bushes and seedlings on 298 different properties. The bushes were eradicated by the application of salt. Of the bushes and seedlings found, 43,010 were bearing seeds. Barberry seeds are eaten by birds and scattered to woodlots, along fence rows, and other places where the birds roost, gather other food, or go for water.

##### Educational and Publicity Activities

The barberry educational and publicity activities again were emphasized this year. The purpose of the educational work is to teach the pupils and students the distinguishing characteristics of the bush and the relation of the barberry bush to stem rust, and to report the location of all such bushes which they find. A total of 2,293 educational institutions was supplied with barberry literature, stem rust specimens, rusted barberry specimens, and study plans. Publicity material to the extent of eighty-eight news articles was published in weekly and daily newspapers. Stories were furnished to farm magazines and the press associations. A total of 93,379 bulletins and circulars and 75,000 other pieces of printed matter was sent to schools, farmers, and other interested persons during the year. Demonstrations were conducted at nineteen fairs, and forty-seven window demonstrations were made.

##### Investigations

As in previous years, a close check of the presence of stem rust in the State was made. In parts of the State that are rela-

tively free from barberries, we have been able to locate missed bushes by first finding the stem rust in the oats, wheat, barley, or rye field and then by the severity of the attack locate the offending bush or bushes.

Rather extensive experiments, which were started in 1926 and continued in 1927 concerning the effect of salt and kerosene on barberry seeds and seedlings, and on the natural death rate of seedlings, were carried forward in 1928. In addition, a new series of seed and seedling experiments were placed in operation. These plots will give us information concerning the viability of barberry seeds, their response to certain chemicals, and also their response to various environmental conditions.

#### CONCLUSIONS.

The common barberry is necessary for the completion of the life cycle of stem rust and spreads such rust to oats, wheat, barley, rye, and about fifty-five known grasses in Michigan. Unless the spread of common barberries is checked in Michigan, they will become so numerous that no grain field will be sufficiently removed to escape an attack of stem rust.

The removal of all of the common barberries from Michigan is the cheapest insurance from heavy losses caused by black stem rust.

Every citizen should assist in eradicating common barberries by reporting the location of all such bushes to State Leader, Barberry Eradication, East Lansing, Michigan.